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ABSTRACT

This paper looks at private interest involvement in education Information and Communications Technology (ICT) policymaking and implementation in the United Kingdom, using the National Grid for Learning (NGfL), an initiative to connect every U.K. school to the Internet and create an online connected learning community of teachers and students with access to a host of approved resources and information within a managed learning grid, as a contemporary form. The extent to which businesses are getting involved in new policy forms and the nature that resulting government/industry links are taking are explored. The paper also examines how key players are emerging and the interests of some firms dominating over others. Above all, the paper is concerned with how the public/private foundation for the NGfL is working out in practice. The paper is based on a series of in-depth interviews with key actors in the formation and initial implementation of the NGfL initiative, including: officials from the coordinating government department, DfEE (Department for Education and Employment); officials from the quasi-government agency responsible for developing and delivering aspects of the initiative, the British Educational Communications and Technology Agency; policy advisors to the Prime Minister and DfEE; as well as key executives in information technology and telecommunications firms and their educational representative body, the British Educational Suppliers Association. (Contains 188 references.) (MES)

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THE POLITICS OF CONNECTIVITY – THE ROLE OF BIG BUSINESS IN THE EDUCATION ICT POLICY IN THE UK

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Introduction

Amidst the Labour government's well-publicised emphasis on 'education, education, education' one of the most significant policy commitments to date has been the National Grid for Learning (NGfL) initiative. Involving £1billion of expenditure over a five year period the NGfL aims to connect every UK school to the Internet and create an on-line 'connected learning community' of teachers and students with access to a host of approved resources and information within a managed 'Learning Grid' (DfEE 1997). The technological magnitude of this task aside, the formation of the National Grid for Learning initiative has been treated by many as a pivotal signpost for the direction of future education legislation, in particular with regard to the integral role the private sector is seen as playing in the development and eventual provision of the NGfL. As the Minister for ICT in Schools recently argued:

> "We depend on an open and supportive partnership with the ICT industry if we are going to provide the high quality resources education needs and at a price schools and colleges can afford. Only if we all work together, will we ensure that the technological society we want to develop is inclusive and brings added opportunities for all" (Wills 1999, p.3)

In this way the NGfL marks one of the Labour party's early reactions to a rapidly changing landscape of education policy-making and has, therefore, been firmly located within wider main emerging societal contexts. Primarily, the rhetoric that has surrounded the initiative draws heavily on the notions of post-industrialism (e.g. Touraine 1969, Bell 1973) and the much heralded yet elusive concept of the 'Information Society' (Lyon 1989, Webster 1995). Moreover, in practical policy terms, these societal ideals have had to be located within the widespread reaction against the neo-Liberal excesses of the 1980s free-marketisation that so characterised Conservative education policy. The emerging approach, fashionably recast as a 'Third Way' in public policy formation (Giddens 1998), attempts to pursue a less sanguine approach to market economics. In aligning the market with the needs of society, one of the tangible manifestations of 'Third Way' policy has been the government's zeal in encouraging and fostering public/private partnerships as the most effective means of developing and implementing policy. This approach to public policy making has been no more apparent than in education. Since Labour's 1997 election the introduction of Education 'Action Zones', Private Finance Initiatives and the 'learndirect' and University for Industry programmes have all been designed to inject educational policy with the realism of private sector involvement. Although previous Conservative administrations initiated similar, but limited, schemes (most notably the City Technology College programme) private enterprise partnerships have featured heavily in New Labour education policy (eg Palast, 2000). One of the first tangible

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initiatives in this 'new wave' of public/private educational policy-making has been the National Grid for Learning.

1. The Public/Private Foundations of the National Grid for Learning

Although chronologically following the Conservative's 'Superhighways for Education' pilot initiative, the announcement of the National Grid for Learning (NGfL) heralded an unprecedented political commitment to introducing Information and Communications Technology (ICT) into schools on a widespread basis. From its launch onwards the initiative has been constructed around the increased role of private interests in educational policy formulation and implementation. As the initial consultation document, '*Connecting the Learning Society*' detailed, the majority of the development of the National Grid for Learning is to be achieved through close partnership with the private sector thus "bringing together the best of private sector creativity and the highest standards of public service" (DfEE 1997, p.3). In this way the NGfL initiative can be seen as potentially representing an archetypal modern/post-modern hybrid form of Kenway's (1994) 'markets/ education/ technology' triad. Although initially sponsored by the state the National Grid for Learning is also largely reliant on commercial interests, public and private expertise and, indeed, is overtly informed by both educational and market values. As an emerging policy initiative of this type the NGfL would, therefore, appear to encapsulate the growing influence of market and technological forces in UK education over the last ten years, potentially constituting a 'new educational form' (Kenway *et al.* 1994). In theory, at least, the National Grid for Learning should be seen as a significant signpost for a new era of educational policy-making.

Conceptualising the relationship between business and education has taken a number of turns on both sides of the Atlantic. Michael Apple, for example, drew attention to the extent to which education had been turned into a 'business' by capitalist enterprise pursuing profits via the creation and sale of curriculum and testing materials (Apple, 1979). In the mid 1970s British and American sociologists demonstrated the pressures to align the organisational and pedagogical practices of schools with the needs and interests of industry and commerce (Bowles and Gintis, 1976: Dale, 1989: Esland, 19 Shilling, 19). Then, and now, other analysts also noted how business has impacted on education through he formulation of employment objectives; in particular the production of appropriately skilled school-leavers and balancing the widely perceived 'needs mismatch' between schools and employers (Saunders 1992). As a result there has been a growing acceptance of 'employability skills' into educational discourse over the last twenty years, with business and industry viewed by some commentators as insidiously replacing traditional educational stakeholders such as teaching unions in the policy-making process (Taylor 1998). And in yet another turn, commentators have more recently reported the extent to which for-profit organisations have been brought in by nation states, under the banner of 'standards-driven reform', to render public education first and foremost a profit making business. Education Management Organisations (EMOs) have been created precisely for this purpose in the US and the UK and in their wake they have made visible the extent of the privatisation of public education (Education Week, 1999: Palast, 2000).

Not surprisingly, the growing influence of business and industry in determining the educational agenda has been treated with caution within the educational community. In particular, critics have questioned industry's interest with 'social responsibility' and the 'public good' above and beyond their driving motivation of profit (Bennett 1995). As Tasker and Packham (1993, p.134) conclude:

> "[T]he two worlds of business and [education] remain profoundly different. The purpose of industry is to generate profit for private gain, usually in competition with other companies. The profit so generated may or may not benefit society; the concept of public good is not central to industry's concerns. The purpose of [education] is to generate knowledge through collaboration between scholars, not competition, and in such a way that society as a whole benefits"

The increased role of business in education may well have be treated with suspicion by the educational community but much remains to be done to tease out that relationship, especially with regard to policy formation and implementation. As Wilks and Wright (1987) contend, the relationship between government and industry has been much discussed but little investigated. Certainly, the consensus among policy analysts has moved away from the overly simplistic notion that business and industry act merely as an interest group lobbying from outside the policy-making process (i.e. Truman 1981). From the 1970s onwards neo-Corporatists such as Lindbolm have instead asserted that business and industry enjoy a far more extensive role in policy formation. This view sees the business class as wielding enormous influence over public policy through the state's structural dependence on corporate investment; with businessmen in market-orientated societies, therefore, enjoying a 'privileged position' within the policy-making process. As Lindbolm (1977, p.175) concluded, "[businesses] constitute a second set of major leaders in government and politics".

From this basis the present paper therefore aims to take a more detailed look at private interest involvement in education policy-making and implementation using the National Grid for Learning as a contemporary form. Thus it intends to explore the extent to which businesses are getting involved in these 'new' policy forms and the nature that the resulting government/industry links are taking. Moreover, the paper examines how the 'key-players' in the policy-making and implementation process are emerging and the interests of some firms dominating over others. Above all the paper is concerned with how the public/private foundation of the NGfL is 'working out' in practice. Thus as Martin (1995, p.898) posits:

> "The central problem here is to explain how firms develop their preferences for social policy initiatives and especially to understand the mechanisms by which new social policy paradigms win corporate converts. What are the conditions under which some companies sign on to far-reaching government solutions when others reject them?" (Martin 1995, p.898)

In addressing these questions this paper is based on a series of in-depth interviews with 'key actors' in the formation and initial implementation of the NGfL initiative. Interviewees included officials from the co-ordinating government department, (the

Department for Education and Employment (DfEE), the quasi-government agency responsible for developing and delivering aspects of the initiative, the British Educational Communications and Technology Agency) (BECTa), policy advisors to the Prime Minister and DfEE as well as key executives in IT and telecommunications firms and their educational representative body, the British Educational Suppliers Association, (BESA)[1]. Interviews lasted between one and two hours and were carried out between October 1998 and August 1999; producing over twelve hours of interviews with some of the key public and private actors in the policy formation and implementation of the NGfL.

2. The Public/Private Origins of the National Grid for Learning

Throughout most of the interviews the origins of the NGfL was firmly located within a background of inconsistent use of educational ICT in schools over the last twenty years. Despite a series of IT initiatives stretching from the 1981 MEP programme to the Conservative's Superhighways initiative in the mid 1990s, education ICT throughout this time was seen as distinctly lacking in a co-ordinated, sustained policy agenda; often resulting in an indifference amongst schools towards ICT (Selwyn 1999). On the other hand successive British governments had supported the purchase of British IT equipment by educational organisations in order to sustain a fledgling computer manufacturing and software industry. For these reasons, the educational ICT market until recently relied only on one or two domestic suppliers. As this source describes, up until the election of 1997, the education ICT marketplace was, therefore, bereft of any 'real' competition. As one of our computing company interviewees observed:

> ... at the time of all this RM [Research Machines] had an immensely big market share in education. And the Government's dilemma is that it had created a monopoly. ... Acorn and RM were big chunky players; Apple was always trying to get in, and ICL was never there.. Suddenly RM is a monopoly and the Government, I think, were looking for people to fill the vacuum [...] They were so desperate to get people who were education compliant to come in as a credible second source. [CO1]

From this perspective, in initiating the sea-change of the NGfL the Labour party were clearly making a break with the Conservative's 'infant industry' approach to educational IT throughout the 1980s, when policies of the time had the over-riding concern of protecting and giving an active impetus to the nascent UK IT industry. That said, towards the end of the John Major's Conservative administration there were emerging signs that small moves were being made towards a change, with the DfEE at least recognising the need to open the marketplace:

> In the very early days the Government's money was specified only to be used on 3 types of computers if we go back to the very beginning. Since then there has not been that sort of prescription, and indeed we have very much supported the DfEE's increasing belief that there should be good competition in this marketplace. It would be very easy for one or two of the major international players to walk in, offer something apparently incredibly

wonderful and lock this market up and kill it if the Government so wished. [BE1]

However, any such belief within the DfEE was tempered by their restricted role in education IT policy at the time, lacking, as they themselves admitted, "the huge underpinning resource programme" needed to effect such change. Therefore, in approaching educational ICT as a potential manifesto commitment, New Labour were clearly recognising a need to break with the previous Conservative ethos and introduce an element of state direction in 'kick-starting' educational ICT:

> It's one of those things that create the climate and I think what we had was a government that was prepared to join it all up because it saw, ideologically, it saw a role for the state, sure. And, as I say, the previous administration saw a lot of these things but ideologically didn't see that as the role of the state. In fact it would have said "if the state intervenes this is how you get a Skoda or Trabant. [NI]

Thus, most firms were keen to play down the genesis of the NGfL coming directly from industry as the following extended account suggests:

> OK well the National Grid for Learning itself is really just a jihad slogan for a number of different strategies that the Government have really and just trying to see how they can tie them all together with one vision statement, and the Vision Statement for that was National Grid for Learning. It really was. ICL will say that they were the people that invented the 'National Grid for Learning', Chris Yapp invented that. I don't know whether that's true or not, I can't say that's is not true, but however, even up to that stage a lot of the government departments, the DFEE [the Education and Employment ministry] with Robin Ritzema [the civil servant charged with the implementation of the NGfL] was actually trying to drive and talk with mainly industry partners about what was required with ICT at schools, Information Communications and Technology in schools, and you actually know that they have lots of different targets which were set as part of the NGFL one is Internet access, another one is e-mail accounts for children, another one is teacher skills. So in fact the National Grid for Learning is really just a Vision Statement where lots of other smaller strategies were actually trying to lead to. [MA]

> There was a number of things that fed into it. There was initiatives related to the broad-band ... a whole range of stuff. I would say that we invented it as a term ... you know if we go back I think Arthur C Clarke actually about 30 years ago came up with it if you are talking about where do phrases and junctions come from. As a policy it probably came from around the time of the Stephenson report to the Labour Party in opposition. At that time there was the Education Departments Superhighway Initiative, yes, There were a number of things looking at internet use, broad band use, a whole range of things. There were Net Years there were Net Days going on in the states, there was a whole range of things ... Clinton getting photo opportunities with a shovel in

his hand. The idea that in addition to infrastructure connectivity you need to start putting stuff on it ... I can remember a conference that I was involved in running in '95 when I was at the SCAA (the Schools' Curriculum and Assessment Authority) called 'Education Information in Highways' ... something like that. There was a number of things around '95 time that were all "saying it's more than just connecting, it's more than just a infrastructure, its all about content". But I don't believe any of the stories that say "we initiated this, we were the first, we had the big idea". I don't go with any of that. Chris Yapp was certainly one of the ones that everyone was talking about. I mean he spoke in conference that I organised. Steve Heppel spoke in the conference a whole range of people, Bruce Bond who was then with BT. Right. So it was sort of in the air around then but I find it very hard to locate it. [NI]

Rather as an amalgamation on the part of New Labour of existing conditions in the marketplace coupled with a characteristic 'rebranding' in the NGfL.

Nevertheless, some of our interviewees took a wider perspective of New Labour attempting to revitalise a flagging domestic marketplace; arguing that the government were also recognising wider global trends in the marketplace. As this Prime Ministerial policy advisor argued, the underlying motivation to create a 'National Grid for Learning' was also firmly located within a global world-wide expansion of education ICT markets:

There's two levels to see it at. One is a global level which is why these guys are interested. Education as a market ... spending on it is rising faster than GDP in every industrialised country in the world and its one of the only markets that is doing that. So it doesn't take much for a global company to think, 'well actually we should be dedicating some resources to this'. But coming down to the level of what is happening in the UK. Before government spent this money what you had was a very small market that was being fought over by quite a few small players who relied on it for their bread and butter and a few players where it was just a dot on the map of what they did ... but they did it because it gave them a warm feeling and it looked good for parents. What's happened now is that this global trend and the government money going in suddenly makes the marketplace look a lot more attractive. The challenge now for policy is to ask 'how can we get the big players in?'. The answer to that is to make sure that they get a sufficient return on their investment ... but at the same time making sure that the little guys who are actually developing that piece of software that will actually change things are reaping their reward from it [SIC1]

As this last quote intimates, the increased involvement of the private sector in educational ICT is by no means a UK phenomena. Indeed, since the telecommunications explosion of the 1980s governments round the world are having to face up to what Irwin (1987) refers to the "dilemmas of regulating markets in eruption". Even from a pragmatic point of view an initiative involving the nation-wide

connection of the country's schools to the Internet could not be physically achieved without *some* private sector involvement. The land lines and fibre optic networks were owned by British Telecom and an ensemble of cable telecom enterprises, all stock-market quoted enterprises. As Parker-Smith (1993) concludes, the creation of any national information infrastructure would not be 'built upon a bare field' as commercial fibre-optic networks already exist. At one level, therefore, the IT industry had to be involved with the NGfL because they already were.

3. The IT Industry and its Participation in the Formation of the NGfL

Beyond a commitment to establishing a 'learning grid' being included in the duly elected New Labour administration's manifesto, the initiative needed 'fleshing out' after 1997. At the time this process was seen by many as a collaborative process between government and the IT industry. Indeed, Bill Gates' series of high-profile meetings with Tony Blair during 1998 were timed to coincide with the launch of the first NGfL consultation document, resulting in some disquiet within the education community over the 'hi-jacking' of the initiative by private interests. The Blair-Gates project is interesting at number of different levels and crucially important because of the timing of the meetings. It can be seen as an interesting initial manipulation of the educational ICT community; because it sent a clear message clear signal to Microsoft's (would-be) competitors that the NGfL was indeed a serious venture. Politically, the rhetoric of working in partnership with private enterprises was put into practice, and moreover, gave the right signals about the Blair's determination to think big and think modern. These meetings put the stamp of legitimacy on government rhetoric about modernising government and preparing citizens and the young generation for the 'information age'. They also further consolidated the location of the NGfL in the larger discourse 'partnership' between government and industry.

With the role of the IT industry in the NGfL at least partially implicit in its origins, how then were private interests represented in the formation of the initiative? Certainly, handling the role of the private sector in what is a very public policy was always going to be a potentially problematic area for the government. In the United States politicians and technologists had been at loggerheads as to whether the role of central government is to build information infrastructures themselves or merely create an economic climate that will encourage private business to take action (Rothschild 1993). Indeed, as Schiller (1985) argues, in general the development of digital networks is a response to the need of the telecommunications industry to create and exploit new markets. Therefore, although New Labour firmly recognised the integral role that industry had to play if the NGfL was to succeed it had to be careful in establishing a relatively open consultative relationship with the private sector, thus ensuring that all interests feel included in the process. In this way mechanisms were quickly put in place by central government agencies - BECTa and the DfEE – in order to facilitate industry/government liaison. On of our respondents saw it this way:

> BECTa is working hard to foster relationships between the various players. So BETCa has certainly identified who it considers to be the key players. And the Chief Executive at BECTa actually puts quite a lot of effort in ensuring that

the Chief Executives of those companies sit round tables and talk to one another. He strongly believes in partnership. He's also got this refreshing naiveté because he's never worked in a commercial environment and he doesn't think that its at all odd to get Richard Girling from RM and Brendan O'Sullivan from Exemplar to sit down together and talk about doing joint promotion. And you think, well golly, that's never going to happen is it? And then on the other hand you think, but isn't it good that the conversation is going on.

What we've got is a number of different structures - its a fairly fluid situation but we have internally in the department a liaison group that brings together all the different interests in the department and also brings together some of the key educational agencies – the Qualifications and Curriculum Agency, Teacher Training Agency, BECTa and so on ... OfSTED (the English schools inspectorate). Within that general umbrella there are other groups. For example we have an NGfL Industry Liaison group which doesn't involve the particular industrial players but the representative proxy groups. In other words it will involve BESA rather than individual companies. Its partly so you don't have to hire the Albert Hall so you can have a meeting. And they meet from time to time and its a place where we can talk things through ... So we do it that way. An awful lot of it is done by simply talking to all the different players and having an open door policy. An awful lot of people come through this room. In fact all the key players have been through here two or three times. So we try and maintain a structure but also we've got to keep on the move. [RR1]

However, the nature and purpose of such meetings was not straightforward. As Heinz et al. (1993) observe, contacts between government and private firms may be very casual or highly formalised, private or fully public and initiated by either party. Moreover the nature of such contact can either be one of *information* or one of *influence*. Thus, although there was tentative consultation between DfEE and industry in both a public and private *informative* capacity this contact critically gave DfEE the chance to subtlety guide the actions of industry:

At a more kind of direct 'us and Department having a relationship' level we have regular meetings with people like Robin and his team. And those meetings we structures as we like to provide some useful information and feedback from our position as a major supplier to the market. But we also like to feel that we are getting the detail of the story that will only come from talking to the people who are making those policies or writing those documents rather than the reported stuff that comes out ... several times later ... So, in as much as is possible, between a commercial supplier and the civil servants involved in decision making we can be kind of working as a team on this project which is 'the National Grid for Learning' rather than us trying to either (a) score points off the government or (b) get them to do things in our favour. Now, that's pretty hard because there are no good models for how a company like us and an organisation like the DfEE can work as a team but it does seem to be in line with the way certainly the government is thinking and

its what we want to do as well. We don't like being surprised by things. We'd much rather that the input that we can give and the value that we've got in terms of the knowledge and the experience and so on goes in at the point when the decisions are being made rather than going in at the point when the decisions have already been made and we've got to try and fix them [PH1]

Thus there was a strong realisation within the IT firms of their need to consult the government in order to fully gain from the initiative:

> I think that its a game ... well 'game' - that's an interesting way of putting it. Our judgement is that decisions that are being made by our customers are now not just being influenced by the direct relationship that we and our competitors have with them. They're being influenced by a whole set of other things. By BECTa, by the government saying that its going to spend a billion pounds on ICT ... Well, would we be selling our customers managed services if the government wasn't pushing down that track? Its not clear. Maybe, maybe not. But certainly, it'll move faster because of these other influences happening. And we have taken the view that given the position that we've got in the marketplace ... [we have to start] participating in that broader set of policy discussions. [PH1]

> We don't like being surprised by things. We'd much rather be in at the point when the decisions are being made rather than going in at the point when the decisions have already been made and we've got to try and fix them [PH1]

But, as the IT firms readily admitted, this new need to participate in the policy process came easier to some firms than others. As Martin (1995) argues, it is important to understand firms' internal policy expertise and their capacity for policy evaluation. Moreover, one must also consider how firms are connected to external networks; in other words how they understand and 'play' the political game. Clearly from the start of the NGfL large multinational IT firms such as Microsoft and ICL were more easily involved in the policy process by dint of their already established links with government:

> I think ICL were better [at lobbying] for three reasons. So ... their size and position as a technology company - despite the fact that they are mainly owned by a Japanese company - they are perceived as the UK's big technology company. So, every committee or working party that the DTI put together tends to have an ICL representative on it. So that's one reason. Second reason, they're bigger and they've been doing it for longer. So they've just got more experience and they've got more people who've done this kind of thing. And you keep coming across people at ICL who clearly it is their life and their job to do this.... So they'd kind of jumped over from just doing the DTI to doing the DfEE as well. So they were, if you like, big and professional and good at it. [PH1]

Although there is now a high degree of political sophistication and convergence in *large*-firm lobbying strategy (Coen 1998) as this quote from RM demonstrates, the more 'politically naïve' UK educational IT firms were clearly lacking in experience in this 'game':

> We took the view then that we had to stop being a relatively insular, inward looking company that dealt with its customers and made them happy and to start behaving more like a big company and dealing with the wider influence base that was impacting on the marketplace that we played in. And we started trying to have meetings with ministers and trying to spend more time with Civil Servants. We'd never really done that before. Not because we didn't want it but because we didn't view it as something that we needed to do. Our success was predicated on going to an individual school and convincing the decision making team in that school to buy a product. Our success wasn't predicated on big national schemes and encouraging the government to spend more money. It was actually right down at grass roots. Clearly that was changing. [PH1]

4. 'Big Boys' Getting Involved

What attracted the attention of business to the National Grid for Learning? Clearly their involvement was never going to be entirely altruistic. And why did government see business participation as vital to the policy's success? While there was considerable scepticism about the extent to which the £1 billion pound budget for the NGfL actually represented 'new' or additional funds, it was sufficient in volume to bring the policy to the attention of for-profit organisations. From the government point of view it saw industry contributing and thereby benefiting commercially in three areas (DfEE, 1998). First was the supply of *content*, in the form of learning materials software, on-line content and broadcast media. Second, the policy required *telecommunications* to link all schools to the net. This included broadband, fast speed links via ISDN connections and the like. While each school had been promised one connection free of charge larger schools would require more and in additional schools would also be required to pay annual connection fees. Third the government intended to put out to tender contracts for the supply of *locally managed services*, under which organisations or consortia would bid for the supply of infra structure and supporting service (servers, routers, browsers, software packages) to groups of educational institutions in defined geographical areas. While government documentation presented this package as a challenge to industry 'to lever change' in these areas (DfEE, 1998, p15), the rapid development of the Grid in practice required expertise and resources of the existing IT and telecommunications industry.

And while profits could be taken, the invitation to industry came with numerous conditions, which hinged on the sensitivities about the vulnerability of children. This has enabled the state to dictate the terms of the formatting of software for example. This is probably most evident in the rules which limit the amount and visibility of 'banner' advertising in NGfL content and in the safeguard that are built in to warn uses that they have made or about o make links to material outside the Grid. Moe generally our view is also that state has been able to use the rhetoric of schools and

children's vulnerability as an argument against enterprises seeking to dominate the market and force out other competitors.

Nevertheless, the NGfL has certainly resulted in a vast expansion of participants in the educational ICT marketplace. As this Prime Ministerial advisor observed: "*All the big boys and the little boys are jockeying for position now*". However, in doing so these relative newcomers to the marketplace found they had to adjust quickly to the relatively 'closed' educational ICT policy community:

> [The big companies] have all got a bit of catching up to do ... this year at BETT Compaq were the big name, the year before Dell were going to be the big name ... I knew the guy who'd been recruited to run Dell's education department. He is now the guy who is running Compaq's education department. So at the moment I'm just thinking, well there's a bit of musical chairs going on round here, quite a lot of corporate money but there's no real understanding coming through yet. [PH1]

As well as at executive level, this trend of large multinational firms 'buying into' the educational marketplace was also in evidence at 'lower levels' - as this Education Manager explains, by recruiting from within the existing education community gave his company instant educational credibility:

> My education management team I've recruited in as the people I know to have been the best, in my judgement, across the education IT supply industry. So my marketing manager is ex-Scottish Council for Education Technology. My sales manager, Brian Mule, is an ex-employer of education in Apple, Sales Manager and formally Scottish Office. My higher Ed specialist is ex-Dell and we are about to hire our schools specialist who is ex-Research Machines. So people who've already got a sympathy and an empathy with the education market is in my mind critical, because all too often in all suppliers I've seen, the new sales person gets education, when in fact it's the most difficult job of all. And I had other jobs outside of education and they were a doddle compared with selling to education. And in fact if you look at education, selling to Higher is a doddle, compared with schools. And so I very much felt I didn't want wet behind the ears people. [CO1]

Which, as he continues, has immediately placed the company as a big player:

> I have to say BECTa and DFEE welcomed us with open arms in a ' good to see another entrant into the market-place' sort of way. And I very much got the feeling, again without any words being said, that there was a bit of a relief that there was another credible IT player with education credentials, which although we didn't have them corporately, we had them by dint of the people I'd hired in. [CO1]

However, those outside of the commercial sector had considerable reservations - one in terms of creating a two-tier environment dictated by company resourcing:

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> Half of everything is about getting invited to the right meetings. So you know what's going on so that when things come up you're not surprised. [Now in the UK] we've got two sets of people, one is that on the software side, the very small providers the one man and his dog operation who always feel out-manoeuvred because they can't resource themselves to stay in who are always surprised. And the other one is these very big new players. One of the big games producers could easily think about moving over to doing something educational but again they would need to find someone. It is not as easy as they think. No, because what gives you educational credibility? In practice it is having an educationalist. [NI]

and secondly, that the NGfL was not leading to an influx of 'new blood':

> I think the most concerning thing about all of this, is when I go, there are people moving backwards and forwards from the advisory to the commercial and whatever. And we all know each other. There's a sense that there is still this quite small 100 people, maybe even less, who have been ... quite a compact web. So we've got this huge initiative and this tiny group of people. [NI1]

Two themes emerged from our interviews. To be a player in the NGfL, even mega corporations which were enormously powerful in the commercial sector, had to learn a new set of rules and work out how to be come 'influencers' both with government and the educational ICT community. Also we were struck by the extent to which the schools' market for ICT was seen to be very different from the commercial market more generally and it is to this second theme we now turn.

5. Attractiveness of Market

Businesses tend to display the most pronounced resistance to policies which weaken their control over markets (Vogel 1978). At first glance it would appear that the National Grid for Learning does exactly this. However, whilst most firms have failed to penetrate the educational computing market over the last twenty years, the National Grid for Learning was seen by companies as at least allowing them a chance to gain a foothold in the education computing marketplace and increase profits. As these interviewees explained:

> The National Grid didn't half make my job easier selling the business plan [to the company] To say look there's Tony Blair saying that the market's good and now's the time to enter not next year or the year after because we have to in at the start of this curve..... I'm here because partly because of the National Grid, but the impetus happened without people even knowing was the National Grid was. [CO1]

> Yes, I mean, I think it's an organising idea that in the first instance industry will get involved because it gives them the means of talking to their customers, being people selling equipment to schools. So it's a simple thing to say, "Do you want to connect to the national grid for learning?". Yes. Shortcut, bang! It all goes away and you call the National Grid for Learning standards fund and

then it all gets similarly sorted. So you think all right, yes. It's a brand and it's an idea and it's those sorts of things which means that a school goes "right - I'm all ready to part with my cash" [N1]

Yet despite the opening up of new markets all the IT firms interviewed were vociferous in the difficulties associated with the schools market. Indeed, as one executive bluntly argued, "*Education is the worst [sector] to sell to, and it is by two orders of magnitude [CO1].* There was therefore a sense of fundamental incompatibility between firms and schools when it came down to the base level of buying and selling, with our industrial interviewees arguing that schools simply did not 'understand' firms, therefore leading to the 'pollution' of the market:

> Well I suppose that somebody who is responsible for making a reasonable commercial return out of the market I constantly watch for like the pollution that is in the market [...] hitherto it's been difficult to compete in a market where it seems an area for freebies. Its very difficult to compete in a market that's polluted. There is still a perception in the market that large companies should give things away for free [B2]

> **Schools always want something for nothing**. [our emphasis]. And the worst thing that they do, for themselves, is they use the word 'support'. Now that word, as soon as I hear the word, "we were thinking about buying 5 computers and we wondered if you would support us?". That support is the most imprecise, puts-schools-into-bad -reputation word, because it can mean anything from, "will you give us them for free?", "will you show an interest and come to our open days?", or "will you have a direct personal relationship with me for the rest of my life?" and "will you have a Samaritan's lines for all my IT needs?". Of course we can do all that, and in every other walk of life we charge for it [and] everybody else pays for it. That is the most expensive part. Now here's the school problem; manpower, and labour-intensive resources is probably the least understood by schools because they're so manpower rich [...] that's what the IT companies have a real problem with. [CO1]

Thus firms' primary motivation of profitability appeared to sit uneasily with involvement in the education marketplace:

> So the actual adage in the entire IT industry is that education is 'high maintenance/low margin' business [CO1]

There was therefore a sense within the firms that the NGfL was not going to radically alter this situation. Furthermore, even this increased value of the NGfL enhanced market was not necessarily seen as attractive. Although many of the large IT companies have seen both their profits and share prices dramatically increase as a direct result of the National Grid for Learning (Bannister 1998, Kavanagh 1998, Bunting 1999) the profits that firms are now chasing were not seen as being overwhelming.

> I think everyone in the industry agrees with the Vision, so the National Grid for Learning is a Vision Statement [but] we're all working independently to get there. But the education market is not a market where you've actually got a very lot of revenue. We give up to 90% discount on our software there and so you have to sell an awful lot of software to actually get in any return to even pay for my team and so you actually have competing groups, who really can't afford to compete in any way [MA1]

> I think that various people at various times have misjudged the attractiveness of this market. [referring here to a locally managed service contractfor £50million] when it came down to the wire there weren't really that many organisations who are prepared to go out on a limb and incur costs. Routinely a company like ICL would expect to be gaining contracts in the region of £500 million not £50 million. These things are not necessarily that attractive and I'm not sure that the government realises that their £1billion investment in education is not necessarily something that is going to make all industry sit up and take notice. [PH1]

> Government should not be expecting commerce to bankroll education. If it wants commerce to bankroll education it should put up corporation tax. And I think that its learning some hard lessons from that with education action zones. Its been pretty difficult to get even the Shells and the BPs of this world to actually put up real cash. They give you management consultancy or this and that but when it comes to delivering real cash its hard. And if schools are going to have to be based on companies delivering real cash there's a big problem.
> [P H1]

Participation in the NGfL wasn't only about profit in the short term. For some benefits would accrue in the long term. One software manufacturer reflected:

> For us [educational ICT] was becoming a very important area, not because we were involved in Education, but obviously we need to consider providing a regular stream of employable people to our big customers who are using our technology. [MA1]

Involvement schools ICT was also about creating a stream of future customers but also employees of the future who were familiar with the architecture of the software. A civil servant also saw the initiative's benefits accumulating indirectly:

> Industry is full of shrewd people. They're interested in it because they see it swelling the market, and swelling the market means product sales. But the distinguishing feature of a lot of companies operating in Britain is that they do have an object commitment to education. So they see it as a benign circle whereby they do business in the way that they do business but they're also helping socially and that's why we've got some very committed and specialised firms in this area. [Ro1]

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For another interviewee who had been involved in selling services to schools the NGfL also involved building human capital:

> Now the government aren't doing it in my view for the fun of it, they're spending at a least a billion on it, probably more and I think we have to look at what this government is aiming to do to move us from a service industry [...] commercial companies' catalysts knowledge is probably the next one we can. It's very difficult to export knowledge in, so we need a workforce that can, that has the abilities to work in a knowledge environment and the National Grid for Learning will for sure, ensure that every child that leaves British education is at least is aware of how to gain knowledge. [BT1]

So, even where short term profits might not be forth coming there was an industry view that participation in the NGfL was worthwhile because it could see how the policy would contribute to the building of a future consumer base, a forward demand for products and work force familiar with and able to use industry products.

As yet the description of the implementation network of the NGfL has been relatively linear. However the on-going expansive accommodation of the IT firms into the policy implementation/negotiation process offers a revealing picture of New Labour's overall strategy. Indeed, handling the role of the private sector in what is a very public policy was always going to be a potentially problematic area of the NGfL. In the United States politicians and technologists have been at loggerheads as to whether the role of central government is to build information infrastructures themselves or merely create an economic climate that will encourage private business to take action (Rothschild 1993). Indeed, as Schiller (1985) argues, in general the development of digital networks is a response to the need of the telecommunications industry to create and exploit new markets. Therefore, New Labour firmly recognised the important role that industry had to play if the NGfL was to succeed, even in its short-term technological aims, and had established a relatively open consultative relationship with the private sector; in marked contrast to previous administrations. Our interviewees recalled:

> I think [industry] have been quite heavily involved in all of this. We meet regularly with them. They meet with ministers. I think in general they recognise that government can go so far and no further. I think this is an artefact of New Labour. What the government is not doing is a deal with a single provider which would maybe what the Old Labour thing would be, "single contract", you know ... which at one step before I was talking about co-ordinated coherence with the state being an active player. Go to somewhere else with and it you would say "we let a single contract to do all this and we manage it". [NI]
>
> I think this Government is far more, actually it was the latter half of the last Government and this one, far more open and consultative than ever before. So if we go back to Philip Lewis' days [in the early 1990s]. You just, they made their announcement twice a year, how much money was going, and everybody flocked after it and it created quite bad behaviour. In fact that's the legacy of binge and purge we've now got. True. The current Government is very

> consultative... it's a better a relationship with the Government and influence in the Government agenda. Plus they want to meet with us. If I want to phone the DfEE now in the Schools Group and say I've got this new idea and project can I run it by you, they will always say yes, come along and tell us. Yes. And if anything they are so desperate to learn from us, its astonishing [CO1]

Thus there was a clear sense that the NGfL marketplace has been set up and firms are responding and participating in its implementation. Yet whereas firms claimed that they were giving the NGfL a much-needed credibility there was also a strong realisation of their need to consult the government in order to fully gain from the initiative:

> I think that its a game ... well 'game' - that's an interesting way of putting it. Our judgement is that decisions that are being made by our customers are now not just being influenced by the direct relationship that we and our competitors have with them. They're being influenced by a whole set of other things. By BECTa, by the government saying that its going to spend a billion pounds on ICT ... Well, would we be selling our customers managed services if the government wasn't pushing down that track? Its not clear. Maybe, maybe not. But certainly, it'll move faster because of these other influences happening. And we have taken the view that given the position that we've got in the marketplace ... [we have to start] participating in that broader set of policy discussions. [PH1]

However, it would be misleading to present these relationships between industry and the policy making process as straightforward and direct. On the industry-side, smaller firms tended to be represented by the influential British Educational Suppliers' Association (BESA); a trade organisation predating even the first education computing policy but now increasingly involved with representing ICT suppliers to the schools sector:

> BESA have an annual general meeting and they have extra ordinary meetings this sort of thing and that is technically where those issues are raised. A similar thing happens but we're broken away from the whole industry with BECTa. But BECTa and BESA work with one another anyway. So Owen Lynch and Dominic together and Ralph form a triangle and all the information is all shared and all upwardly passed to the Minister. [CO1]

Nevertheless, throughout the implementation process central control of the industry/government interface operates on two levels. On a benign level DfEE consults via 'industry liaison' groups, often with BESA playing a key role.

> What we've got is a number of different structures - its a fairly fluid situation but we have internally in the department a liaison group that brings together all the different interests in the department and also brings together some of the key educational agencies - QCA, TTA, BECTa and so on ... OfSTED. Within that general umbrella there are other groups. For example we have an NGfL

> Industry Liaison group which doesn't involve the particular industrial players but the representative proxy groups. In other words it will involve BESA rather than individual companies. Its partly so you don't have to hire the Albert Hall so you can have a meeting. And they meet from time to time and its a place where we can talk things through ... So we do it that way. An awful lot of it is done by simply talking to all the different players and having an open door policy. An awful lot of people come through this room. In fact all the key players have been through here two or three times. So we try and maintain a structure but also we've got to keep on the move. [RR1]

Aside from this 'civil service management' of industrial actors there was also executive control of the implementation process, via the now Prime Ministerial advisor on ICT, Lord Stephenson and his own advisory team. Now established as an ennobled key New Labour insider in both the fields of industry and the arts, as well as one the elite cadre of Britain's top businessmen (Johnson 1999), at one level Lord Stephenson was seen as 'overseeing' the process with the civil service and quasi-government actors. He commented:

> [We are] keeping an eye on where its going, raising issues with DfEE where we think necessary. We are effectively riding the process shot gun, right, we are making sure that the thinking's going right and waving flag on particular issues where we think.

Morevoer, as an industrialist himself Lord Stephenson also appeared to play a key role in 'managing' the major industry actors and, therefore, achieving the government's objective of establishing a controlled marketplace. Another interviewee observed:

> ... Dennis describes himself as a thief to catch thieves, he knows these guys ... [but] we're not trying to stop them doing things, in fact we want them to come in, we want them to be players, but we've got to strike that balance between the little guys and the big fish ... and helping to do that is certainly one of our roles [CRA1]

5. Conclusion

As Jacobs (1988) points out, firms will inevitably resist and not participate in government interventions that threaten to have adverse effects on their profitability. Our industry-based interviews did not see the NGfL in this light. Thus, whilst the NGfL for the participant firms we interviewed does not represent the most lucrative IT market for large, multi-national corporations, it certainly affords opportunities previously unavailable. And as we noted earlier they acknowledged that other benefits would be indirect and long term. Schools were non-conventional customers and the educational market was unlike the market in the commercial sector.

Ministers and their officials have been most effective in persuading the larger corporations to leave something on the table for the smaller, niche orientated and less robust commercial enterprises. Thus the implementation of the NGfL has avoided the

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worst excesses of a capitalist war against all by all. Here we suggest the at nature of the uses, the majority of whom are likely to be children of school age, has given the state a powerful lever in its dealings with big business, a lever which may not be available in other policy arenas. In the education arena the government has fashioned strong regulatory powers which so far have enabled it to harness the expertise and resources of the IT sector and shape both schools ICT market and determine the pace and direction of industry relations with schools.

At best, though it is likely that the government can maintain their present level of involvement over the next five to ten years at most. Indeed, one of the pivotal aims of the NGfL is to create a 'technological' culture of ICT within education which stimulates and provokes schools to autonomously proceed with the procurement of ICT once central funding is eventually phased out (DfEE 1997a, 1998b). Although this 'model of decreasing dependency' is based upon an obvious financial constraints it is also a pragmatic response to the nature of technology provision and the education ICT marketplace. In the words of one of our interviewees, the government overtly "recognise that they can go so far and no further". Indeed, as Levi-Faur (1999) observes, any prolonged political administration of technological competition involves complex bargaining and good technical knowledge of the sectors involved beyond the reach of most governments. Thus in the medium term, the government clearly intend to leave the NGfL to a revitalised education ICT marketplace, which at the moment they are quite closely directing. Thus the longevity of the NGfL rests on both the education IT firms and the schools themselves. How committed these two sets of actors remain to the centrally imposed goals of the NGfL remains to be seen.

Despite current central control, IT firms are clearly gambling on the long-term attractiveness of the NGfL remaining high (Selwyn 1998). Despite present proclamations of public duty and societal good, the continued involvement of IT firms in the NGfL will, therefore, undoubtedly be directed by profit:

> "The primacy of economic concerns to corporate managers is very real. This is not a story of corporate actors engaging in altruistic choice of the public good over their own firms' interests. Rather, it is a story of business managers' struggle to locate their interests in a world of imperfect knowledge and both long and short-term considerations" (Martin 1995, p.909).

This leaves one of the pivotal elements of the NGfL's long-term success with little substantial long-term commitment to the initiative. Despite the large sums of money (in educational terms) that firms are committing to the schools' market the relative commercial unimportance of the schools' sector leaves IT firms free to pull out of the education market as quickly as they entered.

Nevertheless, as consumers and 'end users' the long-term success of the Grid is ultimately dependent on the schools themselves. As Bressers and O'Toole (1998) reason, the distribution of objectives throughout actors in any policy network is fundamental to the eventual policy outcomes. Whereas in the short term the objectives of government and industry have proved to be mutually reinforced (encouraging schools to increase investment in ICT) the compatibility of the NGfL with schools' objectives remain to be seen. As yet schools' reaction to the NGfL is unclear above

and beyond the initial spending of government and lottery money. Whether the NGfL can be successful in creating a culture of ICT throughout the *whole* school sector is debatable. Once the provision and procurement of ICT is left more fully to the marketplace it is hard to see how inequalities will not be perpetuated at some levels. The NGfL's capacity to raise all schools up to 'acceptable' levels of ICT use is therefore in the balance. One foreseeable consequence of the Grid, therefore, is merely an exaggerated version of the pre-1997 education ICT picture; with some schools as technologically rich as others are equally as poor.

Footnote

[1] The names of all the interviewees have been omitted. Nevertheless, representatives from all the major national and multi-national industrial firms prominently involved in the NGfL were interviewed, apart from one, which did not wish to participate in the research.

References

AITKENHEAD, D. (1998) 'Big Business are Playing at Being Teacher: They're up to Something' *The Guardian*, 8th May, p.24

APPLE, M.W. (1979) *Ideology and Curriculum*, London, Routledge and Kegan Paul

APPLE, M.W. (1992) 'Constructing the Captive Audience: Channel One and the Political Economy of the Text' *International Studies in Sociology of Education*, 2, 2, pp.107-131

ARKIN, A. (1998) 'Taste the Marketing Mix' *Times Educational Supplement*, October

ATKINSON, M.M. and COLEMAN, W.D. (1989) 'Strong States and Weak States: Sectoral Policy Networks in Advanced Capitalist Economies' *British Journal of Political Studies*, 19, pp.47-67

BALL, S.J. (1999) 'Labour, Learning and the Economy: a 'Policy Sociology' perspective' *Cambridge Journal of Education*, 29, 2, pp.195-206

BANHAM, J. (1992) 'Taking forward the skills revolution' *Policy Studies*. Vol. 13, no. 1, p 5-12.

BANNISTER, N. (1998) 'IT Firms Set to Net Schools Profits' *The Guardian*, 30th November, p.18

BELL, E. (1999) 'Government Too Close for Comfort With ICT' *The Observer*, 16th May, p.B2

BERKHOUT, S.J. and WIELEMANS, W. (1999) 'Toward Understanding Education Policy: an Integrative Approach' *Educational Policy*, 13, 3, pp.402-420

BIRLEY, G, I. (1994) 'Education and industry - time for re-appraisal?' *CORE*. Vol. 18, no. 1, 1 of 6 microfiche: 2C07-2D02.

BISHOP, P. (1996) 'Education and industry links: a tripartite model' *School Science Review*. Vol. 77, no. 281, p 27-33.

BOTTERY, M. (1996) 'Educational markets, post-Fordism, and professional consciousness' *Curriculum.* Vol. 17, no. 1, p 3-11.
BOWLES , S.& GINTIS, H. (1976) *Schooling in Capitalist America*, London, Routledge and Kegan Paul.
BOYD-BARRETT, O. (1990) 'Schools' Computing Policy as State-Directed Innovation' *Educational Studies*, 16, 2, pp.
BRESSERS, H. and O'TOOLE, L. (1998) 'The Selection of Policy Instruments: a Network-Based Approach' *Journal of Public Policy*, 18, 3, 213-239
BUNTING, C. (1999) 'Retailers Log-On To Profit in Education' *Times Educational Supplement*, 7th May, p.18
BUSINESS & TECHNOLOGY (1998) 'Education Slow Learner in PC Sales' September, p.5
CAMPBELL, D. (1999) 'Computing That Doesn't Compute' *The Guardian*, 22nd June, p.15
CASSELS, J. (1990) 'The Competence of the British Workforce' *Policy Studies*. Vol. 11, no. 1, p 15-19
CAWSON, A., HOLMES, P. and STEVENS, A. (1987) 'The Interaction Between Firms and the State in France: the Telecommunications and Consumer Electronics Sectors' in WILKS, S. and WRIGHT, M. (Eds.) '*Comparative Government-Industry Relations: Western Europe, the United States and Japan*' Oxford, Clarendon Press
COEN, D. (1998) 'The European Business Interest and the Nation State: Large-Firm Lobbying in the European Union and Member States' *Journal of Public Policy*, 18, pp.75-100
COLE, M. (1998) 'Globalisation, Modernisation and Competitiveness: a Critique of the New Labour Project in Education' *International Studies in Sociology of Education*, 8, 3, pp.315-332
COLEMAN, W. and SKOGSTAD, G. (1990) '*Policy Communities and Public Policy in Canada*' Toronto, Copp Clark Pitman
DALE, R. (1989) *The State and Education Policy*, Milton Keynes, Open University Press
DALE, R. (1994) 'The McDonaldisation of schooling and the street-level bureaucrat' *Curriculum Studies*. Vol. 2, no. 2, p 249-262.
DAUGBJERG, C. and MARSH, D. (1998) 'Explaining Policy Outcomes: Integrating the Policy Network Approach with Macro-Level and Micro-Level Analysis' in MARSH, D. (Ed.) '*Comparing Policy Networks*' Buckingham, Open University Press
DAVIS, A. (1994) '*Telecommunications and Politics*' London, Pinter
DAWSON, M. AND FOSTER, J. (1996) 'Virtual Capitalism: the Political Economy of the Information Highway' *Monthly Review*, 48, 3, pp.40-58
DEMAINE, J. (1999) 'Education Policy and Contempory Politics' in DEMAINE, J. (Ed) '*Education Policy and Contempory Policy*' Basingstoke, Macmillan
DEPARTMENT FOR EDUCATION AND EMPLOYMENT (1997a) '*Connecting the Learning Society*' London, Stationary Office
DEPARTMENT FOR EDUCATION AND EMPLOYMENT (1997b) '*The Education Department's Superhighways Initiative: Synoptic Report*' London, Stationary Office
DEPARTMENT FOR EDUCATION AND EMPLOYMENT (1998a) 'Information and Communication Technology Key to Getting Europe Back to Work' *Press Release 204/98* London, DfEE
DEPARTMENT FOR EDUCATION AND EMPLOYMENT (1998b) '*Open for Learning, Open for Business: the Government's NGfL Challenge*' London, Stationary Office

DOWNEY, J. (1999) 'XS 4 All? 'Information Society' Policy and Practice in the European Union' in DOWNEY, J. and MCGUIGAN, J. (Eds) '*Technocities*' London, Sage

EDUCATION WEEK (1999) Education Inc: the business of schooling. Special reports, Nov/Dec. Downloaded from *www.edweek.com/sreports/business*

ENNALS, R. (1987) 'Difficulties in Managing Innovation' *British Journal of Educational Technology*, 18, 3

ERGAS, H. (1987) 'Does Technology Policy Matter?' in GUILE, B. and BROOKS, H. (Eds.) '*Technology and Global Industry: Companies and Nations in the World Economy*' Washington DC., National Academy Press

FARROW, M. (1995) 'A passport for life: a learning strategy for Britain in the 21st century' *Education Review*. Vol. 9, no. 2, p 38-42.

FIEHN, J. (1994) 'Vocational education and industry links' *Education Review*. Vol. 8, no. 2, p 39-43

FITZ, J., HALPIN, D. and POWER, S. (1994) 'Implementation Research and Educational Policy: Practice and Prospects' *British Journal of Educational Studies*, 42, 1, pp.53-69

FITZSIMONS, P. and PETERS, M. (1994) 'Human capital theory and the industry training strategy in New Zealand' *Journal of Education Policy*. Vol. 9, no. 3, p 245-266

FOSTER and PLOWDEN (1997/ 1979) 'Hollowing Out of the State???'

GRANT, W. (1985) 'Corporatism and the Public-Private Distinction' in Lane, J.E. (Ed) '*State and Market: The Politics of the Public and Private*' London, Sage

GREWLICH, K.W. (1987) 'Telecommunications: a European Perspective' in WILKS, S. and WRIGHT, M. (Eds.) '*Comparative Government-Industry Relations: Western Europe, the United States and Japan*' Oxford, Clarendon Press

HADDON, L. (1999) 'The Development of Interactive Games' in MACKAY, H. and O'SULLIVAN, T. (Eds) '*The Media Reader: Continuity and Transformation*' London, Sage

HALL, Peter A. (1993) 'Policy Paradigms, Social Learning and the State: the Case of Economic Policy-making in Britain' *Comparative Politics*, pp.275-296

HALPIN, D. and TROYNA, B. (1995) 'The Politics of Education Policy Borrowing' *Comparative Education*, 31, 3, pp.303-310

HEINZ, J.P., LAUMANN, E.O., NELSON, R.L. and SALISBURY, R.H. (1993) '*The Hollow Core: Private Interests in National Policy Making*' Cambridge, Harvard University Press

HILLMAN, J. (1996) 'A University for Industry' *Training Tomorrow*. Vol. 10, no. 7, p 5-6.

HOLLINGSWORTH, J.R. and LINDBERG, L.N. (1985) 'The Governance of the American Economy: the Role of Markets, Clans, Hierarchies amd Associative Behaviour' in STREECK, W. and SCHMITTER, P.C. (Ed) '*Private Interest Government: Beyond Market and State*' London, Sage

IRWIN, M.R. (1987) 'Telecommunications and Government: the US Experience' in WILKS, S. and WRIGHT, M. (Eds.) '*Comparative Government-Industry Relations: Western Europe, the United States and Japan*' Oxford, Clarendon Press

JACOBS, D. (1988) 'Corporate Economic Power and the State: a Longitudinal Assessment of Two Explanations' *American Journal of Sociology*, 93, pp.852-881

JOHNSON, D. (Ed) (1999) '*The Sunday Times Power List 1999*' London, Sunday Times

KATZENSTEIN, P. (1977) '*Between Power and Plenty: Foreign Economic Policies of Advanced Industrial States*' Madison, University of Wisconsin Press
KATZENSTEIN, P. (1977) '*Between Power and Plenty: Foreign Economic Policies of Advanced Industrial States*' Madison, University of Wisconsin Press
KAVANAGH, P. (1998) 'School Contracts Send RM to Top of the Class' *Sunday Times*, 1st November, p. 6.12
KENWAY, J., BIGUM, C., FITZCLARENCE, L. COLLIER, J. and TREGENZA, K. (1994). 'New Education in New Times', *Journal of Education Policy*, **9**, 4, 317-333.
KICKERT, W.J., KLIJN, E. and KOPPENJAN, L. (1997) '*Managing Complex Networks*' London, Sage
KNIGHT, J. and WARRY, M. (1997) 'From corporate to supply-side federalism? Narrowing the Australian education policy agenda, 1987-96' *Oxford Studies in Comparative Education*. Vol. 7, no. 1, p 183-201.
LABOUR PARTY (1995) '*Communicating Britain's Future*' London, Labour Party
LABOUR PARTY (1997) '*Realising the Potential of New Technology*' London, Labour Party
LEVI-FAUR, D. (1999) 'The Governance of Competition: the Interplay of Technology, Economics and Politics in European Union Electricity and Telecom Regimes' *Journal of Public Policy*, 19, 2, 175-207
LINDBLOM, C.E. (1977) '*Politics and Markets: The World's Political-Economic Systems*' New York, Basic Books
LUKE, T.W. (1999) 'Simulated Sovereignty, Telematic Territorial: the Political Economy of Cyberspace' in FEATHERSTONE, M. and LASH, S. (Eds) '*Spaces of Culture: City-Nature-World*' London, Sage
LYTEL, D. (1998) 'Non-profit Parents, Corporate Kids' *Upside*, 3/2/98
MACDONALD, A and O'NEIL, L. (1997) 'In partnership with industry: the educational -industrial interface' *Journal of Art and Design Education*. Vol. 16, no. 1, p 25-34.
MACPHERSON, A. and RAAB, C. (1988) '*Governing Education: a Sociology of Policy Since 1945*' Edinburgh, Edinburgh University Press
MALINA, A. (1999) 'Third Way Transitions: Building Benevolent Capitalism for the Information Society' *Communiciations*, 24, 2, pp.167-187
MARSH, D. (1998) 'The Development of the Policy Network Approach' in MARSH, D. (Ed.) '*Comparing Policy Networks*' Buckingham, Open University Press
MARSH, D. and RHODES, R.A.W. (Eds) (1992) '*Policy Networks in British Government*' Oxford, Clarendon
MARTIN, C.J. (1995) 'Nature or Nurture? Sources of Firm Preference for National Health Reform' *American Political Science Review*, 89, 4, pp.898-913
MCAVOY, D. (1999) 'Oil and Water Trouble' *Times Educational Supplement*, 2nd July, p.15
MCGINN, N.F. (1997) 'The impact of globalization on national education systems' *Prospects*. Vol. 27, no. 1, p 41-54.
MENAHEM, G. (1998) 'Policy Paradigms, Policy Networks and Water Policy in Israel' *Journal of Public Policy*, 18, 3, pp.283-310
MOSCO, V. and WASKO, J. (Eds.) (1988) '*The Political Economy of Information*' Madison, University of Wisconsin Press

NOBLE, D. (1997) 'A Bill of Goods: the Early Marketing of Computer-Based Education and Its Implications for the Present Moment' in BIDDLE, B.J. (Ed) 'International Handbook of Teachers and Teaching' Netherlands, Kluwer
PALAST, G. (2000) Profit and education don't mix, *Observer, Business section*, 26 March, p7.
PARKER-SMITH, N. (1993) 'Jockeying for Position on the Data Highway' *Upside*, 1/5/93
PETERS, G. (1998) 'Policy Networks: Myth, Metaphor and Reality' in MARSH, D. (Ed.) '*Comparing Policy Networks*' Buckingham, Open University Press
PICKERING, J. (1999) 'Designs on the City: Urban Experience in the Age of Electronic Reproduction' in DOWNEY, J. and MCGUIGAN, J. (Eds) '*Technocities*' London, Sage
POWER, S. and WHITTY, G. (1999) 'New Labour's Education Policy: First, Second or Third Way?' *Journal of Education Policy*, 14, 5, pp.535-546
RAAB, C. (1994) 'Theorising the Governance of Education' *British Journal of Educational Studies*, 41, 2, pp.6-22
REICH, R. (1991) '*The Work of Nations: a Blueprint for the Future*' London, Simon & Schuster
RHODES, R.A.W. **(1990)** 'Policy Networks: a British *Perspective' Journal of Theoretical Politics*, 2, 3, pp.293-317
RHODES, R.A.W. (1986) '*The National World of Local Government*' London, Macmillam
RHODES, R.A.W. (1994) 'The Hollowing Out of the State' *The Political Quarterly*, 65, pp.13Ɛ-151
RHODES, R.A.W. (1997) '*Understanding Governance: Policy Networks, Governence, Reflexivity and Accountability*' Buckingham, Open University Press
RHODES, R.A.W. and MARSH, D. (1992) 'New Directions in the Study of Policy Networks' *European Journal of Political Research*, 21, 1-2, 181-200.
ROBERTSON, D. (1998) 'The University for Industry - a flagship for demand-led training, or another doomed supply-side intervention?' *Journal of Education and Work*. Vol. 11, no. 1, p 5-22.
ROBINS, K. (1999) 'Foreclosing on the City? The Bad Idea of Virtual Urbanism' in DOWNEY, J. and MCGUIGAN, J. (Eds) '*Technocities*' London, Sage
ROBINS, K. and WEBSTER, F. (1999) '*Times of the Technoculture: from the Information Society to the Virtual Life*' London, Routledge
ROLL, R. (1995) 'Foreword' in Tiffin, J and Rajasingham, L. '*In Search of the Virtual Class: Education in an Information Society*' London, Routledge
ROTHSCHILD, M. (1993) 'Techno-Policy or Techno-Pork' *Upside*, 1/3/93
SASSEN, S. (1999) 'Digital Networks and Power' in FEATHERSTONE, M. and LASH, S. [Eds] '*Spaces of Culture: City-Nation-World*' London, Sage
SAUNDERS, L. (1991) 'Education, work and the curriculum' *Policy Studies*. Vol. 12, no. 2, p 13-26.
SCHILLER, D. (1985) 'The Emerging Global Grid: Planning for What?' *Media, Culture and Society*, 7, pp.105-125
SCHILLER, H. (1986) 'The Erosion of National Sovereignty by the World Business System' in TRABER, M. (Ed.) '*The Myth of the Information Revolution: Social and Ethical Implications of Communication Technology*' London, Sage

SCHMITTER, P.C. (1981) 'Interest Intermediation and Regime Governability in Contemporary Western Europe and North America' in BERGER, S. (Ed.) '*Organising Interests in Western Europe*' Cambridge, CUP
SHIPPS, D. (1997) 'The Invisible Hand: Big Business and Chicago School Reform' *Teachers College Record*, 99, 1, pp.73-116
STREECK, W. and SCHMITTER, P.C. (1985) 'Community, Market, State – and Associations? The Prospective Controbution of Interest Governance to Social Order' in STREECK, W. and SCHMITTER, P.C. (Eds) '*Private Interest Government: Beyond Market and State*' London, Sage
TASKER, M. and PACKHAM, D. (1993) 'Industry and higher education: a question of values' *Studies in Higher Education*. Vol. 18, no. 2, p 127-136
TAYLOR, A. (1998) 'Employability skills: from corporate "wish list" to government policy' *Journal of Curriculum Studies*. Vol. 30, no. 2, p 143-164.
TELES, S. (1999) 'A Blend of Help and Hassle' *New Statesman*, 6th March
THOMPSON, P. (1998) 'Strangers in a Strange Land' *Renewal*, 6, 2, pp.1-5
TRUMAN, D. (1981) '*The Government Press*' New York, Knopf
TYACK,, D. (1993) 'School Governance in the United States: Historical Puzzles and Anomalies' in HANNAWAY, J. and CARNOY, M. (Eds) '*Decentralisation and School Improvement*; San Francisco, Jossey-Bass
VAN DE VLIET, A. (1994) 'Industry enters the classroom' *Management Today*. Apr 94, p70-72.
VINTEN, G. (1996) 'The education-business partnership: an evaluation' *International Journal of Educational Management*. Vol. 10, no. 2, p 27-38.
VOGEL, D. (1978) 'Why Businessmen Distrust Their State: The Political Consciousness of American Corporate Executives' *British Journal of Political Studies*, 8, pp.45-78
VOGEL, D. (1989) '*Fluctuating Fortunes: The Political Power of Business in America*' New York, Basic Books
WARD, M. (1996) 'Computer Firms Cash in on the Classroom' *New Scientist*, 22nd June, p.22
WATT, N. (1999) 'Ministers Drop £1.5billion Benefit Swipe Cards' *The Guardian*, 25th May, p.14
WEBSTER, F. (1999) 'Information and Communications Technologies: Luddism Revisited' in DOWNEY, J. and MCGUIGAN, J. (Eds) '*Technocities*' London, Sage
WHITEHEAD, M. (1998) 'The Consuming Passions of Kids' *The Guardian*, 29th September, pp.2.2-2.3
WILD, P. and KING, P. (1999) 'Education and IT Policy: Virtual Policy?' in DEMAINE, J. (Ed) '*Education Policy and Contemporary Policy*' Basingstoke, Macmillan
WILKS, S. and WRIGHT, M. (Eds.) (1987) '*Comparative Government-Industry Relations: Western Europe, the United States and Japan*' Oxford, Clarendon Press
ZIEGLER, J.N. (1995) 'Institutions, Elites and Technological Change in France and Germany' *World Politics*, 47, pp.341-372
MICKELSON, R.A. (1999) 'International Business Machinations: A Case Study of Corporate Involvement in Local Educational Reform' *Teachers College Record*, 100, 3, pp.476-512